Paper 37

Outcomes after Anterior Cruciate Ligament Reconstruction using the Norwegian Knee Ligament Registry of 14,142 Patients: How does Meniscal Repair or Resection Affect Short-Term Outcomes?

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Objectives: While the effects of concurrent meniscal resection and anterior cruciate ligament reconstruction (ACLR) are known to decrease patient outcomes and increase the rate of osteoarthritis over the long-term, overall short-term patient functional outcomes in a large cohort of patients are not well known. Therefore, the purpose of this study is to compare the preoperative and two-year postoperative Knee Injury and Osteoarthritis Outcome Score (KOOS) subscale scores after ACLR with and without meniscal injury. In comparison to an isolated ACLR, we hypothesized that patients with a medial meniscal (MM) or lateral meniscal (LM) resection with an ACLR would have significantly decreased two-year postoperative KOOS outcomes, while those with an ACLR with a MM or LM repair would be indistinguishable to isolated ACLR.

Methods: The Norwegian Knee Ligament Registry (NKLR) was used to evaluate outcomes for a total of 14,142 patients with primary ACLR. The KOOS scoring system was used to evaluate patients on 5 subscales (Pain, Other Symptoms, Activities of Daily Life (ADL), Sport and Recreation Function (Sport/Rec), and Quality of Life (QoL) at time of surgery and at two-year postoperative follow-up. Patients with isolated ACLR and ACLR with LM repair, LM resection, MM repair or MM resection were compared using multiple linear regression modeling.

Results: Preoperatively, in comparison to isolated ACLR, patients that had an ACLR with either a MM repair or MM resection had significantly lower scores for all KOOS subscores and LM repair had significantly decreased scores on the Other Symptoms, Pain, and ADL subscales. Postoperatively, in comparison to isolated ACLR, two-year KOOS outcomes were not significantly different between patients with ACLR and either LM repair, MM resection, or LM resection; however, those with MM repair had significantly lower scores on the Other Symptoms and QoL subscales.

Conclusion: For the majority of study groups, patients with meniscal repairs or resections with concomitant ACLR had postoperative KOOS scores that were not significantly different from an isolated ACLR. Patients with ACLR with meniscal resections do not exhibit decreased clinical outcomes at two years postoperatively. It is recommended that clinicians follow patients with ACLR and concurrent meniscal treatment for longer than two years postoperatively.
Figure 1. Flow chart of the Norwegian Knee Ligament Registry of 14,142 patients describing the exclusions and patients lost to follow-up that led to the final analysis group. ACL = Anterior Cruciate Ligament, KOOS = Knee Injury and Osteoarthritis Outcome Score, LM = Lateral Meniscus, MM = Medial Meniscus.

Primary ACLRs (n=14,142)

Excluded:
- Concomitant knee ligamentous injury or meniscal transplantsations (n=1,198)
- Patients with < 2-year follow-up (n=3,105)
- Meniscal injuries without treatment (n=594)
- Concomitant meniscal treatments (n=561)
- No preoperative KOOS collected (n=1,191)

Eligible Cohort (n=7,413)

Lost to Follow-up (n=2,722)

Analysis Group
Patients with 2-year KOOS follow-up (n=4,691)

- Isolated ACL (n=2,717)
- ACL + LM Repair (n=111)
- ACL + LM Resection (n=647)
- ACL + MM Repair (n=318)
- ACL + MM Resection (n=898)

Response Rate = 4691 / 7413 = 63.3%